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For December, 1956**

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Conquest Of The Medfly

**Citrus Crop Report As Of
Nov. 1, 1956**

Among Florida Horticultural Leaders



R. E. NORRIS

Newly Elected President Florida State
Horticultural Society

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Florida Citrus Mutual Protests Shipment Mexican Oranges

Florida Citrus Mutual has lodged a formal complaint with the Federal government that Mexico was shipping oranges into the United States which were artificially colored but were not stamped to indicate that fact, and was using a highly toxic chemical, banned in this country, to enhance the keeping quality.

Robt. W. Rutledge, Mutual general manager, released a letter he had written Geo. P. Larrick, commissioner of the federal food and drug ad-

on U. S. domestic grown citrus in stamping 'color-add' on individual fruit," Rutledge said. "In addition, some Mexican shippers are treating fruit which is ultimately consumed by the American public with an absolutely prohibited and dangerous chemical.

"Whether every Mexican citrus house uses thio-urea is not for us to determine, but since its ban in 1946, Mexico has shipped more than 2,500,000 boxes of oranges into this country, all of which originated from the Montemorelos area and doubtless some proportion of this has been thio-urea treated. Mexican oranges have a substantial sale in Canada and Europe also and it is not beyond the rounds of possibility that thio-urea is also present in such shipments.

"It is significant that Mexican fruit, ever since exports to the U. S., Canada and Europe began in volume in 1949, has had a reputation for unusually good carrying qualities, pos-

sibly better than any other citrus producing area in the world. It might be that thio-urea has been responsible for this fine performance."

Rutledge said Mutual's export coordinator, Martin E. Hearn, recently visited three of the major citrus packing houses operating in Montemorelos, Nuevo Leon state, in Mexico, and saw Mexican oranges being packed for the U. S. market.

"He was particularly intrigued at the presence of a dip tank located after the coloring tank in the packing lines," Rutledge's letter states, "but repeated inquiries as to its use were met with evasive or noncommittal replies."

On his return, Rutledge advised Larrack, Hearn purchased a box of Mexican navel oranges through regular commercial channels in Chicago and submitted them to different laboratories in Florida for analyses of coloring material or any chemical in the peel.

The laboratories confirmed that artificial coloring had been used on the oranges, Rutledge advised Larrack, but "far more serious was the confirmation that thio-urea was present in the peel of the fruit — which might account for the additional dip tank in the packing line.



ROBERT W. RUTLEDGE
MUTUAL'S GENERAL MANAGER

ministration, asking an immediate and thorough investigation of these alleged irregularities "and all supplies of Mexican fruit failing to conform to government regulations be seized and destroyed at once."

The chemical used to enhance the keeping quality of Mexican oranges has been identified by laboratory analysis as thio-urea, Rutledge said, "an absolutely prohibited and dangerous chemical."

Food and drug regulations permit the artificial coloring of oranges which is a common practice in Florida, but all oranges so treated must be individually stamped "color added" so the consumer will know the color has been enhanced.

We are amazed that Mexican fruit has been exempt from observing the same requirements as are imposed

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R. M. Pratt

Citrus Insect Control



R. B. Johnson

For December 1956

W. L. THOMPSON
R. M. PRATT
R. B. JOHNSON*
Florida Citrus Experiment
Station, Lake Alfred



W. L. Thompson

Red scale infestations were high through November, but are now declining and will continue to decline through January. Purple scale infestations have been unusually low in the fall months, but are now on the increase and will continue to increase slowly through March. The general level will be below average.

Purple mite infestations are increasing slowly and the level is high in some districts. Even moderate populations may cause severe injury at this time. Infestations of Texas citrus mite are also widespread. This mite may be mistaken for purple mite if a careful examination is not made.

Rust mite activity has been extremely high on both leaves and fruit. A peak has been reached, but the general level will remain high through December.

SPRAY PROGRAM

In December, scale insects are usually well under control, but mites are likely to be a problem. However, each year there are a few groves that have moderate to heavy infestations of either purple or red scales. Such infestations are generally found in groves where the scaleicide was applied before early July. Scale should be controlled because it may cause severe leaf and fruit drop as well as make the trees more susceptible to cold injury. Trees that are infested throughout the winter will have a weak growth next spring and a very light bloom.

Purple mite are most likely to be a major problem this month. In recent years, this mite has been a factor in causing an enormous amount of mesophyll collapse, "firing" and leaf drop. Even though mesophyll collapse and "firing" can develop during periods of cold, windy weather on trees free of mite injury, the injury is much more severe where mites

have been present.

The Texas citrus mite is abundant in some groves and the injury caused by it is similar to that caused by purple mite. A description of this mite was given in the November issue of this magazine.

Rust mites are ever present, and even though the crop has been picked, the mite population should be kept at a low level. Infestations of rust mites are also a factor in causing leaf drop during adverse weather conditions. When checking for rust

1.7 pounds of wettable powder per 100 gallons is effective and one of the least injurious scaleicides to use during the winter. Malathion at 3 to 5 pounds of 25 percent wettable powder per 100 gallons is also safe. The larger dosages of either parathion or malathion should be used for heavy infestations. These materials should be applied when the weather is calm and warm.

Oil emulsions are effective, but should not be applied during the winter months because they retard

SCALE AND MITE ACTIVITY BY DISTRICTS*

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves	Rust Mite on fruit
West Coast	3.64	2.50	2.15	2.37	2.28
Indian River	3.72	2.29	1.07	2.58	2.78
Upper East Coast	3.00	1.33	.33	2.66	2.00
Gainesville	2.50	—17	—17	.83	1.20
Orlando	3.00	3.53	.65	1.59	1.50
Brooksville	3.29	1.23	1.63	2.70	2.70
Ridge	4.09	4.50	2.60	3.06	3.32
Bartow	3.53	4.02	.89	4.00	3.50
State Average	3.50	3.34	1.41	2.41	2.42
Last Year	3.88	3.50	1.20	1.83	2.02

* Second week in November. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

mites, examine both sides of the leaves as well as the fruit, because during the winter months, leaves are likely to have as many or more rust mites as fruit and they can be more easily detected on leaves than on fruit that has colored.

Twigs that are defoliated at this time of the year will die before the spring flush of growth. The best way to keep leaves on the trees is to keep them reasonably free of mites and scale. During cold, dry, windy weather, injury from any one species of mite may cause leaf drop, and, if trees are infested with rust mites and purple mites, leaf drop may be much more severe. The use of the safest insecticides is also a factor in preventing leaf drop. Trees are more vulnerable during the winter to injury from sprays that shock the trees than during any other time of the year.

Scale Control: Parathion at 1 to

degreening, if the fruit has not colored, and will make the trees much more susceptible to cold injury. Winter oil applications sometimes so affect the trees that the normal amount of bloom does not develop in the spring.

Purple Mite Control: The secret of purple mite control is to make a thorough application of a miticide at the recommended dosage when the mite population is at a low level. Spray before more than 20 percent of the leaves are infested. Check different areas in the grove and if mites are not found on the lower portion of the trees, check the tops.

DN Dry Mix at 2/3 pound per 100 gallons is most effective when applied on trees with light infestations. However, it may cause a burn on mature fruit, especially Hamlins and Pineapples, that have a weak peel or where there is a breakdown of the

(Continued on page 15)

* Written November 26, 1956. Reports of surveys by Harold Holtsberg, Cocoa; J. W. Davis, Tavares; K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. M. Sutton, Lake Alfred.

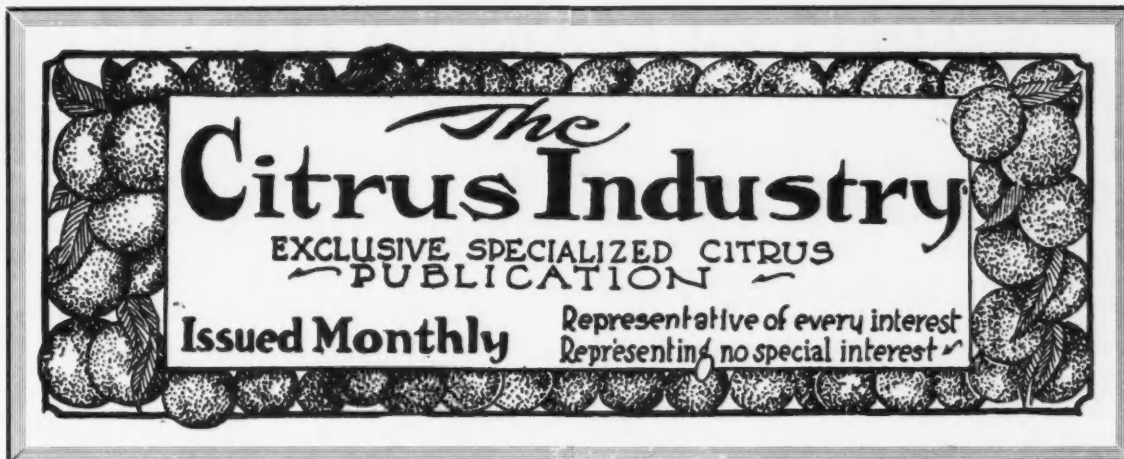


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Florida Citrus Exposition Prepares For Greatest Season

New features of the 1957 Citrus Exposition will be the complete story of the citrus tree. Cooperating in this venture are five Florida citrus nurseries who are recognized as the largest in the world. These five nurseries are the Grand Island Nursery, Ward's Nursery, Lake Garfield Nursery, Glen St. Mary Nursery and Florida Ponkan Corporation.

In this exhibit located in the first building will be the various types of seeds from which the root stocks are grown. In continuity the budding process with illustrations of four root stocks. Each of the root stocks will then be shown growing in a compatible soil. On a huge map of the State of Florida backing up these soil samples will be the various varieties of citrus fruits grown on that root stock and so indicated on the map typical soil locations. As a centerpiece to the overall display will be a huge soil map of the State of Florida graphically illustrated in color.

Each of the cooperating nurseries will supply examples of the fruit grown on root stocks to give the average visitor or interested growers a better picture of what kind of root stock in what kind of soil is best suited as to variety. There will be examples of some 12 or 15 different types of soil and as many or more varieties of citrus fruits themselves.

During Exposition Week which this year will open on February 9,

continuing through February 16 with the exception of Sunday the 10th, each nursery will have on hand some of their experts to answer pertinent questions by the general public or from interested growers. Exposition officials feel that this type of an exhibit will play an important part in

this year's conversion policy to an all citrus exhibit.

Working with the nurserymen and the Exposition in an advisory capacity is the University of Florida Agricultural Extension Service under the guidance of Dr. M. O. Watkins
(Continued on page 18)



In the above photograph are, left to right: Mr. John H. Kaufman, Jr., Grand Island Nursery; Mr. J. F. Alexander, Lake Garfield Nursery; Mr. A. G. Scott, Glen St. Mary Nursery; Mr. Franklin Ward, Ward's Nursery; Mr. Robert J. Eastman, General Manager, Florida Citrus Exposition; and seated, Mr. Fred P. Lawrence, Citriculturist, University of Florida. Eastman is holding the design wherein citrus trees are being incorporated in plantings in front of the Exposition buildings. Mr. Robert Pitman, Florida Ponkan Corporation, was not present when photo was taken.

CITRUS DEMAND STUDIES

Research designed to determine the characteristics of the demand for citrus products is a continuing field of activity in the Department of Agricultural Economics of the Florida Agricultural Experiment Station. Reports on work in this area are not issued at regular intervals, but as various phases of the research are completed. The individual studies involves specific citrus products, and are conducted in different sections of the country. The work is designed so that a series of these studies will fit together to increase our knowledge of the demand for citrus fruit.

Considerable time, money and effort is being devoted to research on the demand for citrus products, because of the importance and value of this information to the industry. A knowledge of how consumers will respond to various supply and price situations will materially assist industry leaders in the development or appraisal of industry-wide marketing programs. Information regarding demand will also aid growers in making production and marketing decisions, and will assist shippers in doing a better job of distribution.

The Demand For Oranges

A study of the demand for fresh oranges was conducted in seven large supermarkets of one chain organization in Kentucky. The geographic area was selected as being generally representative of the West-Central markets for the Florida orange crop. The basic procedure followed in the study was one of artificially varying the prices of fresh oranges above and below the established market level and measuring the customer purchase response to the different price situations thus created. A total of seven price levels were tested. These consisted of the going market price of 39 cents per dozen; three prices representing discounts of 5 cents, 10 cents, and 15 cents per dozen; and three prices representing premiums of 5 cents, 10 cents, and 15 cents per dozen above the going market price. An equivalent set of price differentials was employed for oranges sold in 8-pound bags. In other words, the price of oranges handled in 8-pound bags was adjusted up or down so as to be comparable to the price variation for bulk fruit.

Sales under different price conditions were measured in terms of pounds purchased per 100 customers who shopped at the test stores. This method of measuring sales was em-

UNIVERSITY OF FLORIDA AGRICULTURAL ECONOMICS DEPARTMENT



MARSHALL R. GODWIN
ASSOCIATE ECONOMIST,
IN CHARGE

ployed because any customer can rightfully be regarded as a potential buyer of fresh oranges.

As might be expected, it was found that customers bought more oranges when prices were lowered and fewer oranges as prices were increased. The important thing determined, however, was the rate at which customers changed their purchases as the price was moved up or down from each of the seven general levels employed in the study. The nature of the customer response to the full range of situations is shown in simple form in Figure 1.

The rate of change in customer purchases as a result of price changes is reflected in the "elasticity coefficients" listed in the upper right corner of Figure 1. The significance of these coefficients is a bit complicated to explain, but do not let the big words scare you. These coefficients simply state the percentage change in purchase rate that can be expected as the result of a one percent price change for oranges. For example, at prices around the established market level of 39 cents

per dozen (Segment C-D of the curve in Figure 1), a 1 percent price change resulted in a corresponding change in the purchase rate per 100 customers of 1.5 percent. Thus, within this segment of the curve, customers could be expected to decrease their purchases of fresh oranges by 1.5 percent for each 1 percent that the price was raised. Likewise, customers could be expected to increase their purchases by 1.5 percent for each 1 percent price decline. As you can see, the "elasticity" is thus a measure of how sensitive customers are to price change.

A careful look at the purchase response curve in Figure 1 and at the "elasticity coefficients" for its various parts will reveal that the sensitivity of customers to price changes varied considerably over the range of prices tested. At prices near the market level, consumers were more responsive to price change than at either high or low prices. In other words, a percent increase in price would result in a sharper decline in purchases here than at higher or lower prices. The same would be true with respect to the increase in purchases which might be expected as a result of the price cut. At successive price discounts below the established market level, customers became less responsive to price changes. At the lowest test price, it was found that a 1 percent price change resulted in a change in customer purchase rates of only slightly more than 1 percent.

At prices below or slightly above the established market level, the demand was found to be "elastic." That is, customers could be expected to change their purchase rates by relative amounts larger than the percentage change in price. However, at extremely high prices, the demand was found to be "inelastic." That is, customers were reluctant to adjust their purchases by a percentage amount as great as the percentage price change.

The full implications of these findings cannot be explained in this article. However, the results indicate that small price reductions may be effective in moving supplies of fresh oranges that are only slightly larger than normal, but that somewhat larger relative price reductions will be required for supplies that are much larger than normal. The results also indicate that some consumers are reluctant to reduce their consumption of fresh oranges below

a certain level. Total expenditures at retail may increase as the available supply is reduced (and the price correspondingly increased) past the point where the demand for fresh oranges becomes "inelastic." The reader should, of course, bear in mind that only a relatively small segment of the total fresh orange market is included in this study, and that additional studies will be required to determine differences in the consumer response in the various sections of the country. The Kentucky study is the first phase of the total effort required to determine the character of the national demand for oranges.

A complete report on this study is contained in the following publication:

"CUSTOMER RESPONSE TO VARYING PRICES FOR FLORIDA ORANGES"

By Marshall R. Godwin

Bulletin 508, Florida Agricultural Experiment Station, Gainesville, Florida

The Demand For Frozen Orange Concentrate

An initial effort to determine the characteristics of the demand for frozen orange concentrate was conducted in ten supermarkets in Pennsylvania and New Jersey during 1954. The area selected was representative of the large industrial population areas of the Northeast.

The basic procedure followed in this study was similar to that employed with fresh oranges. Deliberate price variations were introduced in the test stores and the customer response to the varying price situations was measured. During these tests, frozen orange concentrate was sold at retail prices of 8½ cents, 10½ cents, 13½ cents, 16½ cents, and 20½ cents per six ounce can. Owing to the fact that it was possible for consumers to stock up on frozen orange concentrate, each of these five test prices was maintained in two stores for a period of three weeks. This was followed by a two-week period in which all stores sold the concentrate at the prevailing market price of 16½ cents per can. Then a new test price was introduced in each store for a period of 3 weeks. It was necessary to proceed in this fashion in order to assure that any innovation effects resulting from a price change could be identified and measured.

Since the bulletin dealing with this study has not been released to the public, results cannot be announced in detail at this time. We are permitted to say, however, that frozen

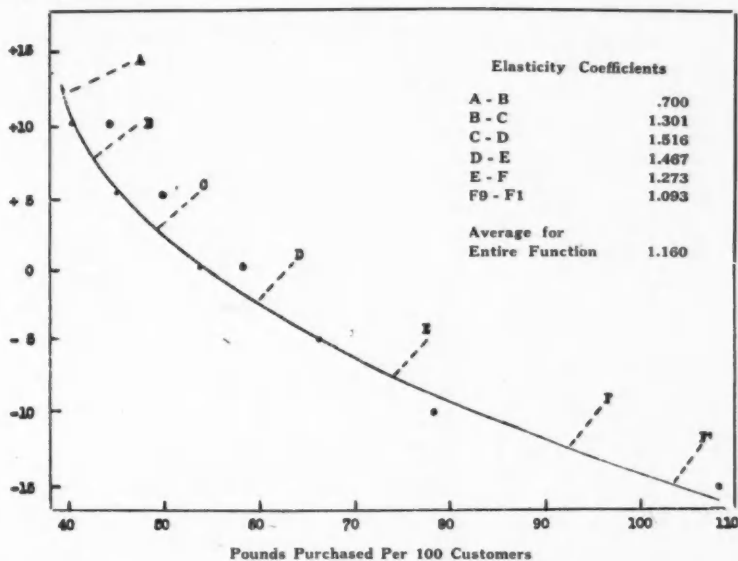
orange concentrate sales varied inversely with the price level at which the product was sold. Further, the results indicate that the demand for frozen orange concentrate becomes quite "inelastic" at high prices and becomes "elastic" as the price is reduced below about 13½ cents per can.

The nature of the demand for frozen orange concentrate was found to

citrus products within the range of prices experienced in the course of normal marketing operations. They further investigate the nature of the competitive relationships among various types of citrus products, and establish the importance of citrus in the operations of food retailing units. Generally speaking, these studies are designed to provide background information on the demand for citrus

RELATION OF PRICE CHARGED FOR FLORIDA ORANGES TO THE PURCHASE RATE PER 100 CUSTOMERS, 7 RETAIL FOOD STORES, CENTRAL KENTUCKY, APRIL 28 THROUGH JUNE 14, 1952

Price Differential
Per Dozen Equivalent
(cents)



be such that the total revenue derived from the sale of the product increased as the prices moved in either direction from a price of about 13½ cents per can. Consumers became progressively more reluctant to cut their purchases as the price was increased above this level and were inclined to increase their purchase rates considerably as the price was reduced below 13½ cents. The results of this study, along with the one on fresh oranges previously mentioned, should be very helpful to the industry in appraising alternative courses of action which might be followed to cope with different supply situations in the future.

Other Studies

Two retail store studies have been conducted by the Department of Agricultural Economics for the purpose of obtaining information concerning the demand for citrus products. These studies are somewhat more general than the two previously mentioned. They attempt to establish the nature of the retail demand for

and upon marketing conditions at the retail level. Detailed reports on this work are contained in the following publications:

"ECONOMIC RELATIONSHIPS INVOLVED IN RETAILING CITRUS PRODUCTS"

By L. A. Powell, Sr., and Marshall R. Godwin

Bulletin 567, Florida Agricultural Experiment Station, Gainesville, Fla.

"CITRUS AND COMPETING PRODUCTS SALES IN 20 MERIDAN, MISS., GROCERY STORES"

By Cecil N. Smith

Bulletin 561, Florida Agricultural Experiment Station, Gainesville, Fla.

The work in the field of demand is one of the most time consuming and expensive types of marketing research carried on by the Agricultural Economics Department. A number of years and a considerable sum of money will be required to provide all the information which the industry needs. However, when consideration is given to the value of this information

(Continued on page 17)

Standardization Of ... Florida Citrus Products

Members and friends of the Florida State Horticultural Society, I will present my topic in the hope that it will not only benefit our great citrus industry but also the ultimate consumers of our products. Because standardization has been such an important factor in the development and growth of our processed citrus industry a brief history of its standards is in order.

The depression brought on the first need for standards. The United States Department of Agriculture was petitioned to issue a Federal standard for canned grapefruit sections. This standard enables a canner to have his warehouse stocks graded and certified by Federal inspectors. Banks used these certificates to establish a fair loan value. As other citrus products were introduced Federal standards were issued on them.

With the rapid expansion of canned citrus, many buyers changed from the early practice of buying on samples and started to buy on a grade basis. In 1940, another use was made of the standards. Several Florida canners requested the U. S. Department of Agriculture to furnish inspectors to their plants on a continuous basis. These Federal inspectors would observe the fruit used, the entire processing of the product and the overall sanitation of the entire operation. With this added information, they were able to do a much better job of grading the finished product. The canner was then allowed to indicate on his label that his product was packed under Federal inspection along with the official grade assigned the product. This was the start of Grade Labeling. To put our taxpayers at ease, this inspection was not a handout; the canner reimbursed the government for all inspectors salaries and expenses for the services rendered.

The War Department made full use of the Federal Standards during the war that followed. They carried on their vast purchasing program by paying for all processed citrus on a grade basis. At the close of the war, the majority of Florida citrus canners were having all of their products inspected. To the credit of our industry this was being done entirely on a voluntary basis with the canners paying the cost of inspec-



ARTHUR R. POBJECKY
UNITED FRUIT DISTRIBUTORS,
INC., ORLANDO, FLA.
AT MEETING OF FLORIDA STATE
HORTICULTURAL SOCIETY

tion.

In 1948, I realized that the existing Federal Standards needed some drastic changes. At an industry meeting I suggested that the industry incorporate the Brix-acid ratios into the standards to eliminate the extremely tart juice that was canned in some seasons. For example, canned grapefruit juice with a Brix of 9.5° and an acid of 2.00% was in the Fancy grade, even though the Brix-acid ratio was below 5 to 1. Canned orange juice with ratios below 8 to 1 also fell into Fancy grade. The Florida citrus industry gave my suggestion unanimous backing. However, the Federal government was not able to make these revisions without the approval of the other citrus producing areas. During this delay, another segment of the industry was heard from. Frozen concentrate had been introduced and the concentrators wanted the new found "Cinderella" protected at any cost. This combination of events coupled with Fuller Warren's ambition to be governor, climaxed in Mr. Warren's realizing his life's ambition

and the birth of "The Florida Citrus Code of 1949."

This law is unique in many ways. It not only requires that all fresh fruit meet the maturity laws in the code, but also all citrus processed in Florida must meet its requirements or be labeled SUBSTANDARD. The code also authorized the Florida Citrus Commission to establish State Grades on all processed citrus. The Commissioner of Agriculture has the responsibility of inspection and compliance of Agriculture. The inspection is being carried out at present by Federal inspectors under a joint agreement with the Florida Department of Agriculture. The Citrus Commission has adopted the Federal Standards as State Standards. Here I wish to emphasize that whereal in other citrus producing areas the use of these standards is voluntary in Florida because of its laws they are compulsory.

Standards can be classified into three parts. If a product is to be properly labeled, it must be described, this is a "Standard of Identity." To protect the consumer the containers must be properly filled, this is a "Standard of Fill." Once established, these two are seldom changed, so we will concern ourselves with the third part — that is, "Standards of Quality."

The standard for canned grapefruit juice has had many revisions. There are separate requirements for the two styles: that is sweetened and unsweetened. The sweetened style requires a minimum Brix of 11.5° and a minimum Brix-acid ratio of 9 to 1. The unsweetened style a minimum Brix of 9.0° and a sliding scale of ratios starting at 8 to 1 at a Brix of 9.0° down, to a ratio of 7 to 1 at a Brix level of 10.5° or higher. We all agree that a 7 to 1 Brix-acid ratio is too tart and so it would seem advisable to raise this level and at the same time simplify the standard by doing away with the sliding scale. We have come a long way in improving our canned grapefruit juice from the high acid product of the past. But I feel that to move forward we must have an examination of conscience. Our maturity laws are based on Brix-acid ratios. This allows some crops of fruit to be

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CITRUS VITAMIN P

(citrus bio-flavonoids)

Twenty years ago in 1936, Dr. Albert Szent-Gyorgyi announced the discovery of vitamin P, or a Capillary Permeability factor isolated by him and his associates from red pepper and lemon. At first he believed that vitamin P was a single chemical substance. However, several months after his announcement, he rectified his statement admitting that vitamin P is a compound of several flavonoids. He presented convincing experimental and clinical evidence in support of his claims that vitamin P corrects and regulates the activity of the small blood vessels, known as capillaries.

Immediately after the discovery of vitamin P, the California Fruit Growers Exchange embarked on an extensive investigation of this substance. The California scientists isolated several flavonoids present in citrus fruit and synthesized some, like methyl-chalcone hesperidin.

The results of the clinical trials with their flavonoid compounds were not very encouraging, and somewhat disappointing. They were inferior to those obtained by Szent-Gyorgyi and his associates.

By 1946-47, the whole problem of vitamin P reached a critical state. The work of Szent-Gyorgyi seemed to be discredited and controversial. The vitamin nature of vitamin P was denied by some workers, its therapeutic value questioned, and some even claimed that vitamin P or flavonoids are neither absorbed nor assimilated by the organisms (Clark). It was under these highly unfavorable conditions that the Southern Bio-Research Laboratory in 1947 began the investigation of citrus vitamin P.

We visualized two possible roads of attacking this problem. One, follow the steps of the Californians and isolate various citrus flavonoids, or, two, return to the original concept of Szent-Gyorgyi and work with vitamin P as a flavonoid complex. We chose the second approach and decided to investigate the flavonoid compound we extracted from citrus wastes. This compound, composed



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of the flavonoids naturally present both in oranges and grapefruits, we called citrus vitamin P, or C. V. P. It is water soluble, and contains several flavonoids, apparently forming one or two complex flavonoid molecules, as flavonoids tend to do so easily. It was this compound that we have been investigating experimentally and clinically for the last nine years.

THE BIO-ASSAY FOR VITAMIN P

The chemical tests on flavonoids are of limited significance. The boro-citrate test, the Laurence test and others give an indication of the chemical nature of a flavonoid but they do not disclose the biological activity of the compound. Thus, our second problem was to work out a reliable bio-assay. Ambrose and DeEds offered a method of testing capillary permeability by applying chloroform to the skin of rabbits and injecting trypan blue dye. Although this method has some merit, it is not sufficiently exact for any quantitative test. Gradually, we elaborated a bio-assay technique which we believe is accurate and dependable. This method is based on the discovery of Dr. M. J. Shear of the National Health Institutes that the polysaccharide isolated from *Serratia marcescens* induces an extensive hemorrhage in the tumors of animals. (1) The capillary system of a tumor is much more sensitive to toxic agents than normal capillaries. Depending on the dose of polysaccharide injected, the animal might die in 6-7 hours or might live a day or two, or if the dose of bac-

terial polysaccharide is very small, the animal might survive.

The bacterial polysaccharide preparation supplied to us by Dr. Shear and labeled P-25 is well standardized. A dose of 0.5 mg. injected in a rat, 150 grams weight and bearer of a tumor two inches in diameter, kills the animal in 6-7 hours. Death is caused by profuse capillary bleeding and a destruction of numerous capillaries of the tumor. Any preparation which could prevent the death of animals so treated should be considered as possessing

(*) Presented at the Annual Meeting of the Florida State Horticultural Society, November 7-9, 1956, Orlando.

capillary activity.

Our tests with citrus vitamin P have demonstrated its biological activity. Table I gives the data pertaining to one of our tests.

investigations with this compound.

The results of these clinical investigations, in which about ninety physicians associated with various hospitals took part, will be briefly sum-

the important role which capillary dysfunction plays in many diseases. Stefanini and Dameshek (3) in their recent book on hemorrhagic disorders point out capillary fragility as the cause of abnormal bleedings. One must clearly visualize that the essential exchange of body fluids takes place in the capillaries and that the role of the large blood vessels is actually limited to transporting blood to the capillaries. The peculiar paradox of the human organism is that the capillaries are easily injured by numerous bacterial and chemical agents or by metabolic disturbances. From the microphotos, 1, 2, and 3, one may see how the capillary is injured.

We know by now that increased capillary fragility is a common phenomenon, much more so than we thought ten or fifteen years ago. The work of Griffith (4), Beardwood (5), Greenblatt (6), and many others indicate that the capillaries are abnormally fragile, and therefore might bleed easily in numerous diseases such as arteriosclerosis, hypertension, and particularly so in diabetes (7). When a stroke (apoplexy) occurs, this means that some capillaries of the brain tissue became over-fragile and break down causing bleeding, often fatal. In many bacterial infections and in almost all virus

TABLE I
THE PROTECTIVE ACTION OF CITRUS VITAMIN P AGAINST THE HEMORRHAGE-INDUCING ACTIVITY OF BACTERIAL POLYSACCHARIDE, P-25 (*)

Rat Nos.	TREATMENT		Result: Death or Survival
	P-25	Citrus Vitamin P	
171—A, m.	0.5 mg.	3 mg.	Death in 17 hours
171—B, f.	0.5 mg.	3 mg.	Death in 22 hours, 25 minutes
171—C, m.	0.5 mg.	3 mg.	Death in 18 hours
171—D, m.	0.5 mg.	3 mg.	Death in 19 hours, 10 minutes
171—E, m.	0.5 mg.	3 mg.	Death in 20 hours, 40 minutes
174—A, f.	0.5 mg.	3 mg.	Death in 19 hours
174—B, m.	0.45 mg.	3 mg.	Death in 24 hours, 30 minutes
174—C, m.	0.5 mg.	10 mg.	Death in 36 hours
174—D, m.	0.5 mg.	10 mg.	Survived
174—E, m.	0.5 mg.	10 mg.	Death in 52 hours
174—F, m.	0.5 mg.	10 mg.	Survived
177—A, f.	0.5 mg.	10 mg.	Survived
177—B, m.	0.5 mg.	10 mg.	Death in 66 hours
177—C, f.	0.5 mg.	10 mg.	Survived
177—D, m.	0.4 mg.	10 mg.	Survived
177—E, m.	0.45 mg.	10 mg.	Survived
177—F, m.	0.5 mg.	10 mg.	Survived
177—H, m.	0.5 mg.	10 mg.	Death in 26 hours
178—A, m.	0.5 mg.	10 mg.	Survived
CONTROLS:			
178—B, m.	0.5 mg.	None	Death in 6 hours, 25 minutes
178—C, f.	0.5 mg.	None	Death in 7 hours, 35 minutes
178—D, m.	0.5 mg.	None	Death in 9 hours
178—E, f.	0.5 mg.	None	Death in 7 hours, 30 minutes
178—F, f.	0.5 mg.	None	Death in 8 hours, 20 minutes
178—H, m.	0.5 mg.	None	Death in 7 hours, 15 minutes

(*) P-25 is a preparation of Shear bacterial polysaccharide.

When 3 mg. of the vitamin P compound were injected one hour before the injection of bacterial polysaccharide, the animals lived an average of 20 hours instead of an average of 7 hours without vitamin P. When, however, the dose of vitamin P was increased to 10 mg., 66 per cent of the animals survived and the remaining 33 per cent lived an average of 45 hours. (2).

Rechecking our results, we found that a dose of 12 mg. gave complete protection to all animals receiving the lethal dose of 0.5 mg. of bacterial polysaccharide. Thus, this dose served as the basis of our bioassays in our subsequent investigations.

During the following years, we tested various citrus flavonoids isolated by us, produced by the Californians and by some other groups. We found that water-insoluble hesperidin gave no protection against capillary hemorrhage tested by this method, even when given in a dose ten times larger than our protective dose of 12 mg. Taking the index 1.0 (corresponding to 12 mg.) as a departing point for the tests of other flavonoids, we found that methyl-chalcone hesperidin showed a very mild capillary activity with an index of 0.1. The synthetic phosphorylated hesperidin exerted an activity about 0.15. Rutin gave an index of 0.2. On the other hand, the lemon infusion prepared by the California Fruit Growers Exchange had a relatively high index of 0.3, or approximately one-third the activity of our Florida citrus vitamin P compound. This is summarized in Table II.

This bio-assay is relatively simple but it requires at least 10-15 animals for each test. There are always some individual animals which might be a little more sensitive to the destructive action of bacterial polysaccharide. Having asserted and proved to our own satisfaction that the Florida citrus vitamin P compound is biologically superior to the ones produced by Californians, we embarked on the clinical

marized by us in this paper.

THE PHYSIOLOGY OF THE CAPILLARY SYSTEM

The medical profession fully realizes



PHOTO 1. Normal capillary.

infections, capillary fragility, localized or generalized, is present. (8, 9, 10). The inflammation of the mucous membrane itself, when one has a sore throat, or swollen gums, or pneumonia, or any other infectious disease is closely associated with the injury to the capillary system. Even in heart failure, with sudden death or coronary thrombosis, one might blame capillary injury for the tragic accident. For in such cases, the so-called intimal capillary, which is located in the wall of the larger coronary vessels is abnormally fragile and might suddenly break down and bleed. If the bleeding is profuse, man dies at once. When the bleeding is very small, a blood clot is formed and coronary occlusion, known as coronary thrombosis, takes place (11, 12, 13, 14). Older people more frequently have increased capillary fragility than younger ones, and the danger to their lives from capillary bleeding is higher (15, 16, 17). The numerous investigations concerning increased capillary fragility in man, all indicate the urgent necessity on the part of the medical profession to give full attention to this problem. It is from this point of view, and for the sake of public health, that citrus vitamin P gradually is becoming an essential remedy in the treatment of many diseases, as an ad-

junct to other therapeutic measures.

CLINICAL INVESTIGATIONS

Radiation Erythema

We started the clinical investigations with citrus vitamin P in the field of x-ray therapy. When a person has a malignant tumor, x-ray ir-

sue are affected and an inflammatory process is present. Thus it was a rational approach in trying to prevent the "burning" of the healthy skin by giving the patients vitamin P. Radiation erythema as we call it, often interferes with the treatment of cancer with heavy and there-

TABLE II.

COMPARATIVE ACTIVITY OF VARIOUS FLAVONOID COMPOUNDS AGAINST HEMORRHAGE-PRODUCING BACTERIAL POLYSACCHARIDE

Compound:	The minimal dose of flavonoids protecting animals from death by 0.5 mg. of Bact. Polysaccharide (*).	Index of biological activity
Citrus vitamin P compound (C. V. P.)	12 mg.	1.0
Water-insoluble hesperidin	120 mg.	0
California methylchalcone hesperidin	120 mg.	0.1
Phosphorylated hesperidin, N. D. C.	80 mg.	0.15
Lemon Infusion concent. California	35 mg.	0.3
Rutin	60 mg.	0.2

(*) Rats, British breed, average weight 150 gm., bearers of Crocker carcinoma, two inches in diameter.

radiations are often used. It is a well known fact that x-rays destroy cancerous, diseased cells. But the healthy cells, tissues and organs surrounding the tumor, as well as the skin to which the x-rays are applied are also injured, although to a lesser degree. Subsequently, the capillaries of the skin and of the internal tis-

fore more effective doses. In these clinical trials, the departments of radiotherapy of twenty-six hospitals participated, among them the University of Chicago, Yale University, the Harlem City Hospital, the Buffalo General Hospital, the California Permanente Hospital and others. Altogether, we collected 2,065 cases treated with x-ray and citrus vitamin P. Not all the cases gave positive results. In about 15 per cent, the results were not impressive. But in the rest of the cases, there was a definite decrease in radiation "erythema" and a much greater tolerance on the part of the patients to x-ray therapy (18, 19, 20).

Tuberculous Hemotysis

When a person has tuberculosis of the lungs, blood might appear in his sputum. This blood is from injured capillaries of the lungs. It is called hemoptysis. Citrus vitamin P was tested in seventeen sanatoria for tuberculosis. The Battey State Hospital in Georgia; the Jefferson Tuberculosis Sanitarium in Birmingham; the Rhode Island State Sanatorium; the National Jewish Hospital at Denver and others for two years conducted the clinical trials with our compound. The consensus of the doctors' opinion was expressed by Dr. William B. O'Brien, Superintendent of the Rhode Island Sanatorium: "It is my impression," he wrote, "that this is a worthwhile drug and that it should be used routinely in the treatment of tuberculous hemorrhage." (21, 22).

Habitual Abortion

According to the Biological and Medical Committee of the Royal Commission on Population, from 7 to 11 per cent of all pregnancies terminate in spontaneous abortion and death of the infant (23). Some mothers are young and apparently healthy and yet they have one after another spontaneous abortions and lost their infants. The miscarriage might occur in the second or third month or much later. It is called habitual abortion. Many factors, such as hormonal disturbances or uterine abnormalities are in-

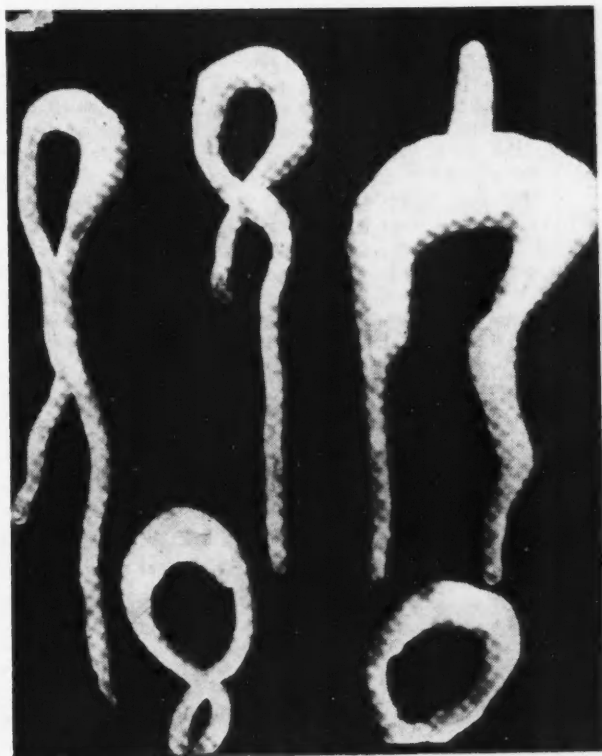


PHOTO 2. Injured capillaries. Their lumen is no longer tube-like.

volved in this condition. Yet, in the majority of cases, the actual cause of the premature loss of infants is always the same: bleeding from the placenta. As the leading American Internist Robert Allan Moore remarked: "the immediate cause of all abortions is retroplacental hemorrhage" (24). And here again, we found that malfunction of the capillary system, an increased fragility of the uterus is the underlying factor in habitual abortion. Greenblatt (25) checked capillary fragility in women who had lost two or more infants and found that 80 per cent of them had an increased capillary fragility, that their capillary system was out-of-order. Citrus vitamin P already has a wide application in cases of habitual abortion. Treatment with citrus vitamin P has, in many instances, brought about normal pregnancy to women who had despaired of ever having children. Several medical papers have appeared, all confirming the therapeutic value of this treatment (26, 27, 28).

Erythroblastosis Fetalis

The most striking fact, however, is the therapeutic value of citrus vitamin P in the prevention of death or brain injury, responsible for cerebral palsy, of infants. The term "erythroblastosis" is used for blood incompatibility of a father and a mother, and when the mothers are Rh negative. Here again it appears that there is a certain defect in the uterine capillaries which results in the escape of fetal cells into the maternal circulation, thus causing, generally speaking, toxic conditions of the pregnancy (an antibody reaction). Several medical papers have indicated the favorable results obtained with the preventive treatment of Rh negative mothers with citrus vitamin P (29, 30).

Bleeding Gastric and Duodenal Ulcers

A modern city man with his worries and poor eating habits, and the stress under which he lives and works, often suffers either from gastric or from duodenal ulcer. It is estimated that bleeding occurs in 85 per cent of duodenal ulcer

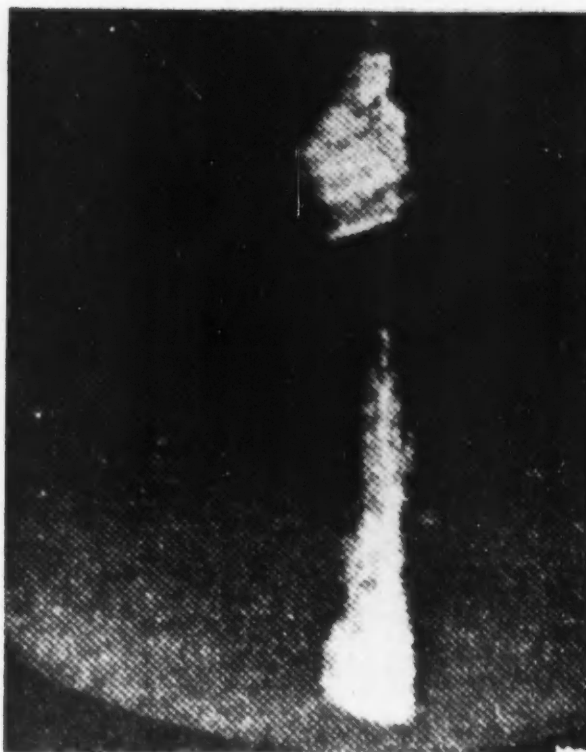


PHOTO 3. Shows the formation of a small hemorrhage, known as petechiae.

cases. Moreover, one should remember that the gastro-intestinal mucous membrane with its vast, finely elaborated capillary network, is particularly sensitive to the toxic factors which beset the digestive system of modern man. Grey (31), Ivy (32), and other medical scientists point out that the bleeding of duodenal ulcer is caused by injury to the capillaries of the intestinal mucosa or lining. When a man is affected with bleeding duodenal ulcer, an operation is usually recommended. But recently, a group of gastroenterologists, headed by Dr. Weiss of the New York Polyclinic Medical School and Hospital announced at the International Congress of Gastroenterology, July, 1956, in London, that surgery can be avoided if the patients are kept on citrus vitamin P. After a few days (3-7) of this therapy, bleeding stops and the symptoms of duodenal ulcer are abated considerably. Other physicians have confirmed this (33).

Cerebral Hemorrhage: Stroke

As has been said, when the capillaries of the brain tissue are over-fragile, they might break down and cerebral hemorrhage occur. When there is not much bleeding the symptoms are not grave. There may be a temporary numbness of a hand, persistent headache, and nervousness. We call such a condition: the little

stroke. When the cerebral bleeding is more profuse, a paralysis of one side of the body takes place or death occurs. The term "apoplexy" is usually applied to this grave condition. Dr. Alvarez, (34), who studied the problem of the "little stroke" asserts that there are millions of persons affected with this ailment in this country alone. The danger of the "little stroke" is that cerebral bleeding as a rule occurs again and again, each time more serious and more dangerous. There was no known remedy against apoplexy or "little stroke" except rest until recently, when a group of medical men reported at the International Congress of Physiology, August, 1956, Brussels, that their three-years studies demonstrated that citrus vitamin P prevented new incidence of "little strokes" and improved the conditions of the stricken patients (35).

Retinitis

A man with high blood pressure or diabetes might awake one morning, only to find that he cannot see out of one of his eyes. His vision is darkened by a large or a small spot. The eye doctor would easily diagnose his case: Retinitis. This means a small hemorrhage from a ruptured capillary of the eye. Diabetics are particularly predisposed to such accidents. Retinitis occurs in about 25 per cent of all diabetics. (Shepardson and Crawford (36), Wagner (37)). The longer a man is affected with diabetes, the greater are chances that he will have a hemorrhage of the eye. 70 per cent of persons who had diabetes for 20 years or more, suffer from retinitis. Several medical papers recently appeared indicating that citrus vitamin P is of value in the prevention and in absorption of ocular hemorrhage, particularly when used in combination with so-called lipotropic factors (38).

Dental Diseases

Citrus vitamin P is widely used in dental surgery and gingivitis. Several hundred case histories were re-

ported so far in dental journals by various dentists (39, 40).

Hemorrhagic Cystitis

When there is an infection of the bladder, blood might appear in the urine. This condition is called hemorrhagic cystitis. Citrus vitamin P, given to such patients, stops the bleeding in 48 hours according to the reports published by two urologists (41).

Hemorrhagic Diathesis

Abnormal bleeding may occur from a variety of causes. A person with high blood pressure might suffer from nose-bleeding, an indication of an increased capillary fragility. Blood disorders, like hemophilia, leukemia, and purpura are always associated with abnormal capillary fragility, according to Stefanini and Dameshek (3), only this factor is secondary to the actual cause of these diseases. 913 case histories have been collected up to the present time concerning the effect of citrus vitamin P on abnormal bleeding in various blood conditions. In hemophilia, this therapy decreases the frequency of bleeding attacks (42). It brings about a moderate improvement in leukemia and idiopathic purpura, but its therapeutic usefulness has been demonstrated in allergic purpura, nosebleeding, rectal bleeding and menorrhagia (uterine bleeding) (43).

Increased Capillary Fragility

Capillary fragility can be tested by negative pressure, with a so-called petechiometer. A group of 30 older persons showing a considerable increase in their capillary fragility were placed on citrus vitamin P for four weeks. In all but two cases, the capillary integrity was restored to normal (44, 45).

The clinical investigations with Florida citrus vitamin P, cover altogether about 9,000 case histories of various types of capillary fragility and capillary bleeding treated with this compound.

Before concluding our paper, we would like to stress the fact that all clinical and experimental data reported by us in this paper, concerns only the citrus vitamin P compound isolated by us from citrus waste and known as C. V. P. From our experience, it appears that the method of extraction and production of citrus bio-flavonoids has a prime bearing upon their biological activity and therefore on their therapeutic value. This means, that any other citrus bio-flavonoid compound produced by methods differing from ours might not have the same high biological activity. Our records, experimental and clinical cannot be applied to

such other compounds. If another citrus vitamin P (flavonoid) compound is developed, it should go through the same procedure as we did with our material. First the bio-assays, and then the clinical investigations, following our pattern.

We must emphasize very strongly a point of prime importance. Citrus vitamin P is a medicinal product, and should be treated as such. Any attempt to produce and to bring on the market any citrus flavonoid compound without proper and extensive experimental and clinical testing would bring disrepute to this invaluable therapeutic weapon for human health, and might kill all the potentialities now open for this by-product of the Florida citrus industry.

To conclude: The experimental and clinical studies on Florida citrus vitamin P compound extracted from citrus waste, the results of which were reported by us in sixty-three papers published in medical and scientific journals, have supplied the evidence of its therapeutic value in increased capillary fragility and capillary bleeding. Indirectly, the data so collected confirms the original findings of Szent-Gyorgyi and his associates concerning vitamin P.

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New and different ways of packing food often make it taste better. As you know, we all like what looks good. Clear and colored plastic containers for salads and desserts are a pleasure and inexpensive. A plastic knife, fork and spoon are often welcome additions to the lunch eater's enjoyment of his meal.

❖ ❖

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STANDARDIZATION OF FLORIDA CITRUS PRODUCTS (Continued from page 8)

harvested as early as September and October. The native Floridian or Florida cracker doesn't eat grapefruit until a much later date. So we live under two sets of maturity standards, a brix-acid ratio for the "Yankees" and a taste test for ourselves. The unfortunate part is that only a very small part of our crop is picked during this early period; statistics will bear me out on this. The only argument that can be advanced for this early harvest is that it helps the market on fresh fruit by extending the shipping season. Most growers will bear me out that for many years, they haven't realized any of this better market price. It is my honest opinion that if the grapefruit season was postponed until November it would not only eliminate some of the undesirable fresh fruit going to market and to canneries but it would also create a better economical return to the grower and processor.

It is sound logic that the few crops now being picked early would taste better if they remained on the trees longer. This would encourage more consumers to eat grapefruit in fresh form thus helping the fresh market. By eliminating the very small percentage of early grapefruit being canned in September and October the overall quality of canned sweetened grapefruit juice would be improved. Our best quality unsweetened grapefruit juice is canned in the late spring when grapefruit reaches its optimum sweetness. Canners would be encouraged to carry over large inventories of premium quality unsweetened juice if they knew that they did not have to compete with the low price now created by the canning of the early packing house eliminations. Buyers would also remain more active through September and October with this added confidence in our market. I am certain that all of this would add up to improved quality in both fresh grapefruit and canned grapefruit juice, with a better economical return to all segments of the industry.

The Standard for canned orange juice has also had many revisions. Sweetened orange juice requires a minimum Brix of 10.5° and a minimum Brix-acid ratio of 12 to 1. Unsweetened orange juice a minimum Brix of 10.5° and a sliding ratio scale of 10 to 1 if the Brix is less than 11.5° and down to 9 to 1 if the Brix is above 11.5. Here again we all agree that the 9 to 1 ratio

Newly Elected Officers Florida Horticultural Society

At the recent meeting of the Florida State Horticultural Society, which was one of the most interesting meetings in the long history of the Society, the following officers were elected to serve during the coming year.

In this list of names will be found many of the leading figures in the citrus and other horticultural fields of the State.

EXECUTIVE COMMITTEE—1957

General Officers:

President: Robert E. Norris, Tavares.

Secretary: Dr. Ernest L. Spencer, Bradenton.

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Dr. George D. Ruehle, Homestead.

at any Brix level is too tart and so it should be raised and the sliding scale, which only serves to confuse our production personnel, be done away with. Again we can help the quality of both fresh oranges and canned orange juice by holding back slightly on our packing schedule.

There is one other important factor in orange juice that I must dwell on. This factor is color. Many of our northern friends associate the word orange with the orange color. The deep orange color of synthetic beverages to which artificial color has been added, strengthens this illusion. The color of Florida orange juice varies from yellow to yellow-orange in color. This variation in color depends on the variety of orange and to a lesser degree on the grow-

ing season. Consumers should be informed that this lack of orange color in no way distracts from the health-giving qualities of Florida orange juice — actually in many instances the vitamin level on the pale colored early varieties is even higher than the later varieties.

The suggestions I have made on canned grapefruit juice and orange juice would of course also benefit the quality of canned blended juice.

Canned tangerine juice can be improved by changes in our methods of process and storage. Some in the industry would like to reclassify tangerines and call them oranges. I wish to remain old-fashioned in this respect. To me those zipper-skinned fruit mother put in our stocking at Christmas are still tangerines.

Our latest product, orange juice in cartons, still is in search of an official name. Because of the varied methods of production it has been very difficult to establish a Standard of Identity. However, steps have been taken to have the Federal Food and Drug Administration issue a Standard of Identity and this should enable packers to properly label this item.

I have saved Florida Orange Concentrate for the very last. My reason is that the Florida citrus code and Federal Standards have done much to promote the popularity of this product. The code prohibits the addition of sugar to Florida orange concentrate — this protects the consumer from any possible adulteration that might arise by the substitution of sugar for natural fruit solids. The code establishes a minimum fruit solids value in the finished concentrate which assures the consumer that after the addition of three parts water the reconstituted orange juice is of the same strength as the freshly extracted orange juice. The minimum Brix-acid ratio of 12 to 1 is much higher than the minimum of 8 to 1 allowed in fresh fruit and the present 9 to 1 allowed in canned orange juice. And here I wish to clinch my previous arguments against the early harvesting of Florida citrus. In spite of the rigid controls the concentrators have imposed on themselves. They were able to produce seventy million gallons of frozen orange concentrate during the past season. To do this, they utilized fifty million boxes of oranges out of a ninety-two million box crop. This entire production was accomplished during a four months production period, in most plants, and the growers enjoyed the best returns on record.

Consumers may now ask this ques-

tion: If your industry is so highly standardized why the variations in quality? There are many reasons. Primarily the differences in the varieties of fruit we grow; differences in the processing and blending of fruit; and differences in the packers as well. Standards will never change these, but standards can and must assure you a satisfactory product. Many of our quality problems arise after our products leave our warehouses. Prolonged storage at high temperatures will alter the quality of all canned citrus products. Many handlers and consumers still fail to realize that frozen orange concentrate is a perishable product and must be handled as such.

In conclusion any industry that has enjoyed the tremendous growth of ours has a right to be proud of the products it produces. It is with this thought that I wish to re-emphasize that the only real important change we can make to further improve our products is to change our maturity laws. To do this the standards must be rigid enough to delay the picking of fruit until November or such time that we ourselves are satisfied with the flavor of the fruit we harvest.

CITRUS INSECT CONTROL FOR DECEMBER, 1956

(Continued from page 3)

peel. It appears to be safe on grapefruit and Valencia oranges and other oranges that do not have a thin peel. A combination of DN and parathion is more likely to cause a fruit burn and leaf drop than a DN-wettable sulfur spray. The burn is usually on the lower part of the fruit where large drops of spray dry and leave an excess amount of spray residue. On light infestations, either a 1 percent or 1 1/2 percent DN-sulfur dust can be applied. No injury has been observed following a DN dust. DN sprays should not be used with lime-sulfur or in other alkaline solutions.

Aramite 45W at 2/3 pound or aramite 15W at 2 pounds per 100 gallons can be used. It should not be used in alkaline solutions but can be combined with parathion and wettable sulfur.

Ovotran at 1 pound per 100 gallons is effective, but does not kill adult mites. It should not be used more than once a year in the same grove. If the grove is heavily infested, ovotran should be supplemented with either 1/2 pound of 15 percent parathion or 1/2 pint of 40 percent TEPP per 100 gallons to kill the active mites.

Systox at 1/2 pint per 100 gallons is very effective. Use the same pre-

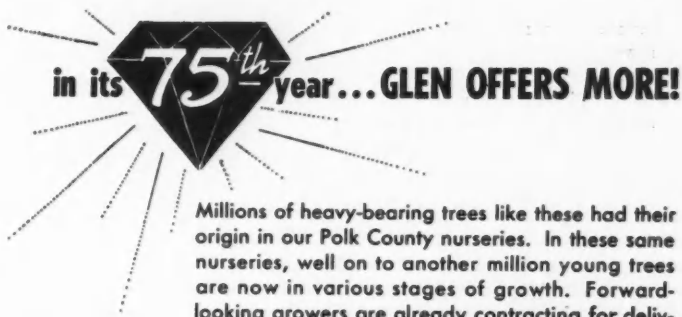
cautions when handling Systox as parathion. When spraying the trees, the upper surfaces of all the leaves should be covered, but it is not necessary to wet the undersides of the leaves. Systox can be used with wettable sulfur, but should not be used with lime-sulfur or in other alkaline solutions.

Texas Citrus Mite: Little is known in Florida about the control of this mite, but materials used for the control of purple mite can be expected to control the Texas mite. Wettable sulfur has not been effective.

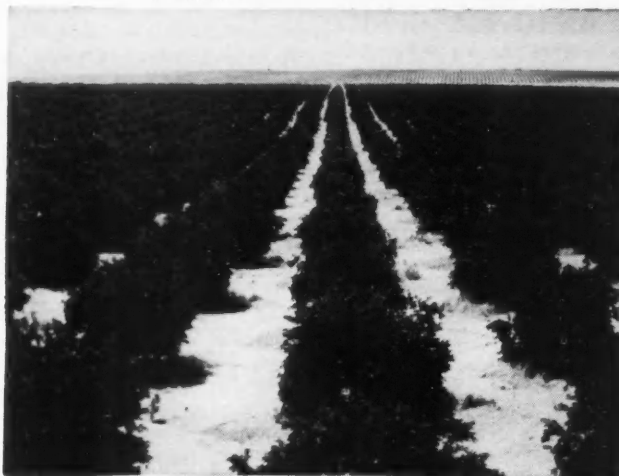
Rust Mite Control: Lime-sulfur, 1 gallon plus 5 pounds of wettable sul-

fur per 100 gallons, is the most effective winter spray, but it should not be applied on Hamlins, Jaffas or tangerines. Wettable sulfur, 8 to 10 pounds per 100 gallons, is safe on all varieties and can be used with any of the miticides. Lime-sulfur should not be used with DN Dry Mix, aramite or Systox, but it can be used with ovotran and parathion. Sulfur dust can also be used, but it is not as effective in cold weather as during the summer months.

For more detailed information refer to the 1956 "Better Fruit Program" or consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.



Millions of heavy-bearing trees like these had their origin in our Polk County nurseries. In these same nurseries, well on to another million young trees are now in various stages of growth. Forward-looking growers are already contracting for delivery in 1958—some even for 1959. In this period of heavy demand, a word to the wise should be sufficient.



GLEN

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Largest Citrus Nurseries in the World

Where Do We Stand On Budwood Certification?

Introduction

Last year I told this audience that the Plant Board group working with your Florida Certification Program not only sincerely believed in its great potential value to this state, but we were also convinced that it is the most active, and the most complete, and the best program of its kind anywhere.

Today, I can also tell you that it is the largest program for citrus budwood anywhere in the world. We are proud of this of course because it shows that our growers and nurserymen believe in it as much as we do. But we are even more proud of the fact that it has been able to reach this size without any sacrifice of the care that goes into the selection of these trees, or any of the accuracy of their testing.

What Have We Accomplished?

At present, we have over 1100 candidate trees, 929 already under test and the balance being budded as rapidly as we can collect the wood for inoculations. We have 389 parent trees that have been tested and found to free of the virus Psorosis. We have over 6000 Psorosis-free scion grove trees that have already been planted to increase our supplies of Psorosis-free budwood in the immediate future. We have over 36,000 Psorosis-free nursery trees already moving into commercial grove plantings. These three groups, parent, scion, and progeny trees, give us a total of over 43,000 sources of Psorosis-free budwood just three years and eight months from the time this Program was started.

We Want Only The Best

Because we want only the best and know that someday we're going to have the best, and because we have set very high standards for our requirements for certified trees, we are inclined to minimize this very considerable achievement and to not realize what a very great step forward these trees represent for our citrus industry.

We should remember that some of the world's major citrus producing areas have operated Budwood Programs for years with the sole purpose of finding supplies of Psorosis-free budwood, and once these supplies were found, they considered the work of certification completed.



GERALD G. NORMAN
IN CHARGE BUDWOOD STATION
AT CAMP McQUARRIE,
AUGUST 15, 1956

Here in Florida, while we fully realize the importance of Psorosis and recognize it as probably the most generally destructive virus of citrus, its elimination is not our ultimate objective or even our first objective. Our candidate trees are all screened for trueness to type and bud variation and then tested for Tristeza virus before they are tested for Psorosis.

Even though we can't certify these Psorosis-free trees as Tristeza-free (because Tristeza can be carried by insects) we still run the Tristeza tests so that we at least know the parent trees were free of Tristeza at the time they were accepted as candidates. Because of these very thorough tests, we believe that our registered Psorosis-free trees are much less likely to be infected with the Tristeza virus that run-of-the-grove budwood sources. Actually, 5.7 percent of all the trees tested in the program to date were dropped because they were infected with Tristeza. These infected trees not only appeared healthy, but were

considered outstanding by the growers who submitted them. Because they were on tolerant rootstocks they showed no symptoms or reaction from the presence of this virus. Buds from these trees on Sour orange rootstocks would never have made satisfactory growth. Let's remember that budwood from these stable, vigorous, Tristeza tested, Psorosis-free parent trees will make far better trees than any we've ever had and let's not sell these trees short.

When we started this Program, most of us figured that all we had to do was to pick out a number of good healthy trees, run routine tests on them and then register them as the various tests were completed. We know now that this is not true, far from it. From our first selections, in addition to the 5.7 percent lost from Tristeza, we also lost 12 percent of these apparently healthy trees from Psorosis infection. This is about what we might have expected, and in fact, was actually encouraging because it indicated that we were probably eliminating a great many trees infected with Psorosis from preliminary bark symptoms in the field.

However, after 2½ years, when we began to examine the Xyloporosis test trees, we found a very high percentage of the candidate trees carrying this virus. This percentage can be expected to increase up to a period of 4 years or more from the time of inoculation.

Jim Childs, the next speaker, is going to discuss the distribution of Xyloporosis and its effect on our Certification Program in detail, so I will say no more about it here.

Where Do We Go From Here?

When we began to realize what a very high percentage of even our best grove trees were carrying this virus Xyloporosis, we immediately asked that our certification committee be recalled to give us authority to seek out trees on our own rather than to continue testing only old line trees submitted by growers. Actually, even from the first year selections there is not a single important commercial variety where we don't have at least one source of budwood that appears to be free of Tristeza, Psorosis, and Xyloporosis. But we felt that since the budwood of some

of these varieties might be very limited in quantity, the state itself would need to supplement the volume of wood from these trees to insure adequate budwood supplies for the future. After the committee had changed the Statement of Policy, we were then in a position to make our own selections of candidate trees.

We began with selections from a nucellar Valencia grove consisting of 20 acres of eighteen year old Valencia seedlings. Maturity tests were run on some of these trees. Twenty-four were screened for yield and bud variation and examined for Psorosis leaf symptoms during last year's Spring growth flush, then budded into test trees in our certification test plot. We know now that 9 of the 24 selected are infected with Tristeza virus. But this in no way detracts from the value of the other 15 under test. They may well be the answer to one of our most serious problems, finding Valencia budwood that is completely virus-free.

If we organized our own breeding program and started immediately to produce nucellar seedlings, it would be 5 or 6 years before we could make preliminary selections from these seedlings and at least 10 years before we could recommend them for limited commercial planting. We are fortunate that we had a Florida grower with the foresight and vision to plant Valencia seedlings 18 years ago. As a public service, the owner of these trees has entered into a cooperative agreement with the Plant Board to test and develop these trees and has agreed to sell no budwood from this grove until they are certified and we are ready to recommend them. Budwood will be moved out of this grove only under our supervision and control so that we can keep long term records on scion and progeny trees and see to it that the budwood is fairly distributed to accomplish the most good for the industry.

Like any other seedling, a nucellar seedling is an unknown quantity, and proved on commercial rootstocks from the viewpoints of compatibility, vigor and yield. We have great hopes that these trees may be the answer to some of our certification problems, but we must remember that without proper bud selection and development, Valencia nucellar seedlings can actually be a liability because they may be variant to the point of being fruit sterile and may be presumed to be virus-free without actual testing to make sure they are virus-free.

In order that we may be able to

demonstrate the vigor and productivity of these nucellar trees, the owner of these trees has turned over ten acres of land for our use. Budwood selections from the best of these trees will be budded by the Plant Board to Rough Lemon seedlings (all from the same parent tree source) so that in time, actual proof of the bearing quality can be demonstrated in a block interest with the best old line Valencia budwood we can find on the same rootstock. If this wood can be proved to be outstanding, then this foundation planting will serve as a source of Valencia budwood for the whole state and will serve as a bank where these bud strains can be protected from virus infection. In addition to the Valencia nucellar trees, many Sweet Seedlings from all over the citrus area have been taken into the Budwood Program and 80 parent trees from the old Crosby-Wartmann groves at Citra are under test. In addition, several hundred seedlings from these original Pineapple strains are being grown which will eventually produce some nucellar bud sources. In effect, we are extending this Program not only to search out the best old line trees but to develop new strains as rapidly as possible.

I know in the past few years you have heard a great deal about the two viruses, Tristeza and Xyloporosis. They are not new diseases. They have been here many years. What is new about them is that we now recognize their presence in this state and are beginning to have some understanding of their distribution, what rootstocks they affect, and their symptom expression and reaction. They are discussed and described in these meetings not to disturb or concern the grower but simply so that he can be aware of their presence and can take practical steps to avoid them in the future or to plant tolerant stock-scion combinations that will result in the least possible loss. We feel that it is bet-

ter to accept the presence of these viruses, face up to the facts as they exist, take the necessary steps to minimize the losses they cause, and go on from there with the objective of their eventual elimination. If we all understand their symptoms and are aware of their destructiveness, we will be better able to live with them until the day comes when we can get rid of them.

Conclusion

We have committed ourselves to finding virus free budwood for our Florida growers and nurserymen. We know now that this is not going to be an easy job and that it is going to take considerable time. If it is once demonstrated that we have no virus free budwood of some varieties, then we must be prepared to propagate and develop strains of those varieties that are virus free. If it is humanly possible to get virus free budwood of the commercial varieties Florida needs, you people are going to get them. If not, you will know we have done everything in our power toward this end.

CITRUS DEMAND STUDIES

(Continued from page 7)


tion to producers, handlers, and industry groups in the development of marketing programs and in making individual marketing decisions, the past and future effort is regarded as a sound investment of public resources.

HOLIDAY TREATS

Cold Sliced Turkey or Chicken Garnished With Orange Slices

Slice turkey or chicken as thick as possible. Cut into finger length pieces. Arrange attractively on platter garnished with orange slices cut in half. (Leave the rind on for color and convenience in eating.)

Except for traffic accidents, falls account for more accidental deaths than any other cause.




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Florida Citrus Cannery Co-op Holds 26th Annual Meeting

On Tuesday, November 13, 1956, the Florida Citrus Cannery Cooperative held its twenty-sixth annual meeting. When one goes back over the old records to see the reasons for organizing this great cooperative, one cannot help thinking how



W. C. PEDERSEN
ELECTED PRESIDENT

right the men were that looking ahead saw the majority of our citrus fruit would be marketed in the processed form. In the year 1930 it took more than just thinking to get a business going. It was about the height of the depression, and money was very scarce.

The organizations that first had faith in the processing business and put their money in the new plant were as follows: Babson Park Citrus Growers Association, Hunt Brothers, Lake Wales Citrus Growers Association, Mammoth Groves, Mountain Lake Corporation, and Waverly Growers Cooperative. Three of these organizations are still members of the Florida Citrus Cannery Cooperative — namely, Hunt Brothers, Lake Wales Citrus Growers Association, and Waverly Growers Cooperative. The other members now affiliated are as follows: Consolidated Navel Stores Company, Dundee Citrus Growers Association, Haines City Citrus Growers Association, Lake Byrd Citrus Packing Company, Lake Garfield Citrus Cooperative, Umatilla Citrus Growers Association, and Winter Haven Citrus Growers Association.

Written reports were read to about one hundred people representing nearly twelve hundred growers who

are affiliated with the organizations that are members of the cannery. The following were elected to serve as directors for the season 1956-57: F. Elgin Bayless, Sebring; A. T. Brandon, Winter Haven; Joe P. Ellis, Bartow; W. B. Gum, Lake Wales; C. B. Hipson, Umatilla; Frank M. Hunt, Lake Wales; Joe E. Keefe, Dundee; H. E. Keller, Avon Park; W. C. Pedersen, Waverly; and R. V. Phillips, Haines City.

W. C. Pedersen was elected president; W. B. Gum, first vice president; Joe E. Keefe, second vice president; A. T. Brandon, secretary; Marvin H. Walker, assistant secretary and general manager; J. F. Childs, treasurer; and John Loveless, assistant treasurer.

The meeting brought out that the Florida Citrus Cannery Cooperative had had one of its most satisfactory years, and members were well pleased with the reports given by the various department heads.

FLORIDA CITRUS EXPOSITION PREPARES FOR GREATEST SEASON (Continued from page 5)

and Mr. Fred Lawrence, Citriculturist. Mr. Gerald Norman of the Florida State Plant Board is also working with this group.

To round out educational and functional displays at the 1957 Citrus Exposition the State Plant Board will install a working pathological laboratory. Information as to the why of this State activity and what service they perform will be told in minute detail. The story of spreading decline and the destructive nematode will be told in illustrated form.

The Florida State Citrus Inspection Division of the State Department of Agriculture will install a typical Inspection Station to which men in the field will bring samples of citrus fruits to be tested so that the casual visitor can see and better understand this service.

The Florida Flood Control District in West Palm Beach will bring to the Exposition an animated exhibit depicting some of the water problems confronting growers in the State of Florida. Talks on this subject will be conducted on Wednesday during the Agricultural Day Luncheon and at the Citrus Forum Wednesday afternoon.

This year's Exposition will have as its theme citrus fruits themselves. Many Florida growers remember pre-war exhibits of massive displays of fruits. These will be repeated at this all citrus show. For the first time

Revision Of Standards For California and Arizona Oranges

Revised standards for California and Arizona oranges were announced recently by the U. S. Department of Agriculture. The revision was made at the request of the California orange industry and became effective on the first of December.

The revised standards provide minimum diameters for sizes 80 to 392 inclusive in inches and hundredths of an inch. A "Standard Sizing and Fill" designation for use in describing sizing and pack of volume-filled or jumble-packed containers is also provided. The definition of "serious damage" by scale is changed to conform to the definition of "damage" by scale. In addition, the U. S. No. 3 grade is deleted, and other changes have been made to improve and clarify the standards.

During the 1954-55 crop season, sales of oranges for fresh market amounted to nearly 57,000,000 boxes in the U. S., which included about 27,500,000 from California and 825,000 from Arizona.

all three can manufacturing companies, American Can Company, Crown Cork & Seal Company and Continental Can Company will combine their efforts in one massive display to tell the story of the gigantic growth in the use of the can in the Florida citrus picture. Last year 63 per cent of Florida's overall citrus crop went into cans. The two railroads in Florida will tell their story to visitors to the Exposition as will the Florida Cannery Association and the Florida Citrus Processors Association.

The James E. Strates' giant midway will furnish entertainment during the week in an area completely isolated from the Exposition itself. The Florida Citrus Queen Contest will be a feature the first three days with an entire new fireworks display to cap each day's activities.

This all citrus show for 1957 is one that leaders in the industry have indicated they want with Exposition officials setting up the entire format on that basis. This "face-lifting" will prove of infinite value to the entire citrus industry.

Many falls result from unsafe acts such as rushing about unnecessarily, using make-shift ladders, running up and down stairs, failing to wipe up spilled liquids, or overlooking small objects on the floor.

Conquest Of The Medfly

Victory over the Mediterranean fruit fly in Florida now appears assured. U. S. Department of Agriculture experts agree that this destructive pest can be eradicated. However, continued vigilance and effort will be required for six months more . . . maybe longer . . . before present eradication activities can be tapered off appreciably.

The round-the-clock control and eradication program by USDA and the Florida State Plant Board, in effect since April, has drastically reduced fly populations in heavily infested areas and slowed down the spread of the pest to new areas. But the Medfly is tough and tenacious. It remains a threat to the South's fruit and vegetable crops until that "last fly" is pinned down.

This insect attacks a hundred or more fruit, vegetables, and nursery plants in our southern states the year round. Citrus fruits, except lemons and sour limes, are among the preferred hosts. Like other flies, the Medfly is a prolific breeder. In South Florida, it can develop a dozen or more generations a year. Each female can lay as many as 600 eggs.

Tracing the course of the Medfly's invasion of Florida points up its menace. The fly sneaked into the State — probably in baggage arriving at a Miami-area port or airfield. Before it was discovered in grapefruit growing in a Miami backyard in April, it has become generally established in a thousand-square-mile strip along the southeast Florida coast. Ft. Myers, Tampa, and St. Petersburg were also heavily infested. From these tourist centers the fly was carried unwittingly by travelers and tradesmen to most of the important commercial fruit and vegetable producing areas of the State.

Powerful new insecticides, streamlined traps, effective lures, and safe fumigants . . . developed through the years of foresighted research . . . were available and promptly put to use in the Florida emergency.

A bait spray that both attracts and kills flies is the key to the eradication. Malathion, an organic phosphate that is deadly to the fruit fly but harmless to warmblooded animals at rates used, is mixed in water with protein hydrolysate, an attractive Medfly food. This bait spray makes complete coverage of all foliage unnecessary, since it draws flies to treated areas from nearby untreated strips.

Applications of the bait spray are timed to the life cycle of the fly. Medflies start breeding 6 to 10 days after emerging from the pupa stage. Since the malathion kills for at least a week after application, unless it is washed off by rain, spraying on a 10-day schedule should prevent practically all adult Medflies in treated areas from reproducing. But eggs and larvae inside fruits and pupae below ground are untouched by the spray, so the schedule must extend to cover the entire life cycle. This is theoretically accomplished with 5 or 6 scheduled sprays over a period of 40 to 50 days — generally enough in areas of light infestation.

Many obstacles delay complete eradication, especially in heavily infested areas. Sudden showers may wash off spray residue soon after application. Bad weather, mechanical failure of spray plane, and the difficulty of laying an accurate spray swath at high speeds, low altitudes, and in the face of variable winds, all give Medflies a chance of survival. Researchers found that handskinned, overripe mummified fruit hanging on trees could trap larvae inside and

extend the fly's life cycle by several weeks. Fly eggs or larvae in fruit held in home refrigerators may resume normal development days or weeks later, when the fruit is removed from storage.

In Miami, the infestation was so heavy before the first spray that every 100 traps were catching an average of 300 flies a day. Despite the fact that 6 sprays knocked the catch per 100 traps down to 0.3 fly a day, Medfly fighters anticipate considerable "mopping up" in Miami, as well as in other limited areas.

Intensive trapping surveys will continue as a check on the effectiveness of treatments and to spot any new infestation. Plans call for 40,000 traps to be hung throughout Florida and to be manned until no trace of a Medfly is found. Only then will trapping be reduced to a routine type of survey that will be on the lookout for any new arrivals of the Medfly and related species.

FILLED CELERY RECIPE

Wash celery and remove tough fibers on outer stalks. Fill celery with a soft sharp cheese. Cut in one inch pieces and chill in covered container until serving time. Arrange on platter with Ham Balls.

EMJEO

(80/82% MAGNESIUM SULPHATE)

Many years a favorite source of soluble magnesia for Florida soils. Used extensively in fertilizer mixtures for citrus crops and vegetables. Especially useful and economical for direct applications where only magnesia is required.

Florida growers now consider magnesium a primary plant food in the same category with nitrogen, phosphorous and potash.

The recommendations of the Florida Citrus Experiment Station at Lake Alfred, published in January 1954, stress the need for large application of magnesium for Citrus in soluble form and state that it is usually applied as a Sulphate.

Ask your fertilizer manufacturer for EMJEO, long a dependable source of this key plant food.

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Reports Of Our Field Men . . .

SOUTH POLK, HIGHLANDS, HARDEE, SARASOTA AND DESOTO COUNTIES

C. R. Wingfield

We are again confronted with weather conditions that could mean starting up the irrigation plants. The fact is that it has already started. The 6 to 15 inches of rain received several weeks ago has gone. The trees are looking good considering what they have gone through. Appear to be going dormant very fast, however, I feel sure the high winds are having its effect on this condition. These winds are causing dehydration of leaf causing them to drop. There is a lot of drop and no doubt it is being caused by either or all of the following: rust mite, red spider or winds.

Fertilizer application goes on at a rapid pace and will continue up into December. Of course many growers took time out to get that turkey. And are planning for a little hunting. The fruit is breaking in color and eats good and of course is moving into the markets rapidly. Prices have been fairly good and there is hopes they will improve before concentration period starts.

W. POLK, S. HILLSBOROUGH & MANATEE COUNTIES

J. D. Toll

At the time of this writing, November 15th, this territory is again suffering from a lack of moisture.

Most growers who maintain a semi-annual fertilizer program will be fertilizing their groves again this month. Groves should be watched closely this time of the year for purple mite (red spider) infestations. A heavy infestation of purple mite can cause severe leaf droppage.

A lot of land has been prepared for the setting of young citrus stock the latter part of this month.

The first cold weather of the season hurt some pasture land, but very little frost damage was seen on vegetable crops.

Watermelon growers have their land ready for bedding, fertilizing and planting. I believe the number of acres planted this year will

be about the same as last year.

Sincere best wishes to you and your family for a MERRY CHRISTMAS and a HAPPY AND PROSPEROUS NEW YEAR.

NORTH CENTRAL FLORIDA

V. E. Bourland

We are having nice weather now. Early fruit is being picked at a rapid pace, some tangerines being spot picked, but very light on account of size and test, other fruit is sizing up better than expected. Most all groves have been worked with fertilizer applied. Red spider is working in most groves, some damage has been done in spite of all efforts to hold it under control. Also Florida red scale is working in a number of groves at this time.

All groves should have good fire lines cut, fence rows and ditches cleaned now. Young trees are being hoed and banked.

We had a light frost which showed up on pasture grass, but cattle are looking very good. A very light vegetable crop being put in in this section.

EAST HILLSBOROUGH AND PASCO COUNTIES

E. A. McCartney

The few days and nights of cool weather we had recently put color on the citrus fruit. We do need rain badly, however, as some of the groves have started to show wilt. The early oranges need moisture to firm them up for picking. We are busy on the Fall application of fertilizer and are also applying dolomite and limestone, where needed. There has been a noticeable amount of fruit drop due to scale where growers neglected their spraying, also some rusty fruit due to the same reason.

Melon growers are preparing land and making plans for the coming season. The vegetable growers have started their season off with a fair market; tomato growers south of this territory have hit the jack-pot on early shipments. I was in Lee County part of the week ending November 17th and saw tomatoes bringing \$8.00 to \$12.00 per hamper, even higher for the top grades.

Col. S. Douglas Gibson, from

Miami Shores, who owns several good producing groves in Hillsborough County, paid us a visit last week and expressed himself as being very well pleased with what he saw as to condition of groves and the quality and quantity of his crops. We are always glad to see the Colonel.

HIGHLANDS AND POLK COUNTIES

J. K. Enzor, Jr., & R. E. Lassiter, Jr.

The fall application of fertilizer is well on its way to being completed. This application is considered to be important in relation to fruit set next spring.

In the last six weeks red scale populations have increased to serious proportions in many groves. Many of these growers have been applying parathion for control of these insects at this time.

The rust mite population has been fairly high and we are finding purple mite to be serious in some places. Growers should be cautious and watch for these insects at this time, due to the fact that they may cause serious leaf drop which would result in dead wood at this time of the year. It is best to inspect leaves for infestations as the mites are very difficult to see on colored fruit. A more thorough spray coverage is necessary during cool weather than warm weather for effective control of rust mite. Purple mite activity is expected to increase if the weather continues to be dry.

Growers are beginning to prepare for the cool weather by banking young trees and placing the heaters and wood in the groves.

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*Uncle Bill Says:*

Along at this season of the year most folks is thinkin' about Christmas . . . 'n along with the business of tryin' to figger out jist what presents will best suit some member of the family. They is time fer most folks to stop long enuf to sort of tally up and think about the things they've got to be thankful fer . . . some folks say they is carryin' over the gratitude they felt on 'Thanksgivin' Day through the Christmas season which is purty sound thinkin'.

Probably the best way to really take stock of our own blessings is to put aside the thoughts we've had from time to time during the past year when nematodes, Medflies, dry weather 'n other things fretted us a lot . . . and just concentrate on the good things that we've got . . . things like havin' a decent place to live, clothes sufficient fer our needs, families and friends that sort of overlook our shortcomings . . . er maybe bein' grateful that we've got a car that'll run, or that we are in good health . . . as a matter of fact they ain't none of us, no matter how tough we may think the goin' is who can't find a lot of things that we can be grateful fer.

One way to find things that we should be thankful fer is to think about other folks, who don't have the right to vote for the leaders in their governments . . . or the poor folks in Hungary who were slaughtered like animals 'cause they tried to put up a fight fer their own freedom . . . er folks who is sufferin' from some incurable disease, er those who are crippled to where they are bedridden, er jist can't git around like other folks . . . er any of a thousand other things that we kin think of which ought to make us kind of happy that we are, by comparison, fixed mighty good.

'Spect that most of us would be a lot happier if we'd jist spend more time thinkin' about the good things that we've got instead of huntin' all the time fer things we can find to make us feel sorry fer ourselves.

Anyhow, so fer as we are concerned, we want to wish you every one a truly Merry Christmas and the Happiest of New Years.

144578

Citrus Crop Report As Of Nov. 1, 1956

U. S. D. A. MONTHLY REPORT

FLORIDA

Heavy rains during harvest affected yields of most crops in West Florida and generally excessive and damaging rains in the eastern half of the State damaged truck crops at all stages of growth. Citrus groves, however are in good condition and rains during the month furnished adequate soil moisture. Temperatures in the State averaged near normal for most of October.

CITRUS

October brought rains to Florida's citrus producing area, creating very favorable conditions for development of the new crop. Both fruit and trees are in excellent condition. The maturity of the fruit appears to be about two to three weeks later than usual. Cool nights the latter part of the month have helped bring a color break to the fruit. Utilization in volume has been slow to get started. By the 10th of November about 2.5 million boxes of oranges had been utilized, a million less than last season. Grapefruit also showed 3.0 million vs. 3.8 last year. The citrus forecast for 1956-57 at 95 million boxes of oranges, 35 million boxes

of grapefruit, 5.2 million tangerines and 380,000 boxes of limes remains unchanged from a month ago.

UNITED STATES CITRUS

Estimated production of the 1956-57 early and midseason orange crop remains unchanged from last month at 70.9 million boxes — 5 percent larger than the 1955-56 crop. FLORIDA, Texas and Arizona have larger crops than last season, while in California and Louisiana production will be smaller. FLORIDA'S production is expected to amount to 54 million boxes, including 3 million boxes of Temples — 2.5 million boxes larger than the 1955-56 crop. California's crop of Navel and miscellaneous oranges is expected to total 14.5 million boxes — 4 percent smaller than last year. Estimated total production of 2.4 million boxes in Texas, Arizona and Louisiana is one-third larger than the 1955-56 crop.

Production of 1956-57 Grapefruit — (excluding the California summer crop) is estimated at 42.3 million boxes — 3 percent less than last year, and 9 percent below average.

Texas with 3.5 million boxes and Arizona with 3 million boxes are up slightly from last year.

Valencias in Texas and Arizona are expected to total 1.35 million boxes, or 16 percent above last year. The first estimate of California Valencia production will be made as of December 1.

The California Lemon crop for 1956-57 is forecast at 13.6 million boxes — one million boxes more than the 1955-56 crop.

In California the decline from last

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month in the condition of the citrus crops reflects the effects of the prolonged dry spell in Southern California which has continued since Spring. Prospects for the 1956-57 crop of Navel oranges appear good in Central California, although the Southern California crop is expected to be light. Early rains in the central part of the State have helped the Navel oranges. Harvest started in the earliest districts about November 5, but volume was light until mid-November. Conditions of the 1956-57 Valencia crop declined during the past month, although there is a good set of fruit. Harvest of the old crop Valencias extended through November. Much of the lemon acreage is located in the area where soils are very dry, and conditions of the crop declined during the past month. Harvest of the new crop has begun in the Desert Area and in Central California. Grapefruit in the Desert Valley show good sizes although the set is lighter than last season. Some of the crop was harvested during November. In other areas of California grapefruit prospects declined.

Prospects for Texas citrus showed little change during October. Scattered showers were helpful and some groves were watered from private

HORTICULTURIST SAYS USE FRUITS AND NUTS FOR HOME PLANTINGS

Why not use more fruit and nut producing plants in the Florida landscape designs?

Asst. Horticulturist Jasper Joiner of the Agricultural Extension Service asks that question, now that the dormant season has arrived and most fruit and ornamental plants can be successfully transplanted during the next two months. Fruit and nut plants can improve the looks and increase the usefulness and value of the home grounds and add to the enjoyment and recreational activities of the family — the four basic things required

well, but water from irrigation districts is still limited. Fruit is small and sizing slowly but the trees have maintained a good appearance. Harvest during early November was light.

In Louisiana weather has been favorable for harvest, although fruit shows bruise and puncture damage as the result of the hurricane.

of home ground plantings, Joiner says.

He adds that several kinds of fruiting plants fit into every phase of the landscape plan — as base, border, screening and accent plants and as shade and scaling features. "In Florida, we have a choice in fruiting plants ranging from the deciduous kinds to the most tropical of plants, which are rare to all other areas of the United States," he points out.

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